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POTENTIAL CREATIVE ABILITY AND THE PRESCHOOL CHILD.

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A STUDY WHICH USED A VARIETY OF BEHAVIORAL TASKS TO STUDY POTENTIAL CREATIVITY IN PRESCHOOL CHILDREN IS PRESENTED. THE BEHAVIORAL TASKS, ESPECIALLY DESIGNED FOR MEASUREMENT OF YOUNG CHILDREN, ARE DESCRIBED ON THE DIMENSIONS OF PSYCHOLOGICAL FREEDOM, WILLINGNESS TO TRY DIFFICULT TAKS, FREEDOM IN USE OF CONFORMING AND NONCONFORMING BEHAVIOR, CURIOSITY, AND ORIGINALITY. THE PAPER FOCUSES UPON THE DIFFICULTIES IN MEASUREMENT OF YOUNG CHILDREN AND THE NEED FOR OTHER INSTRUMENTS, AND PROPOSES RESEARCH ABOUT FORCES RELATED TO THE DEVELOPMENT OF CHARACTERISTICS OF POTENTIALLY CREATIVE CHILDREN. THE POSSIBILITY THAT TEACHERS COULD PROVIDE THE CHILD WITH THE KNOWLEDGE AND EXPERIENCES ESSENTIAL FOR RESPONSIBLE FREEDOM TO EXPRESS CREATIVE ABILITIES IS EXPLORED. FIVE REFERENCES ARE INCLUDED. THIS DOCUMENT WAS PUBLISHED IN THE PROCEEDINGS FROM THE FIRST SEMINAR ON PRODUCTIVE THINKING IN EDUCATION, MACALESTER COLLEGE, ST. PAUL, MINNESOTA, PAGES 97-107, JANUARY 1966. (CB)

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POTENTIAL CREATIVE ABILITY AND THE PRESCHOOL CHILD

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The very word creative implies behavior that means a giving of one's self rather than behavior which is coerced or imitative. Carl Rogers (1959) defined the creative process as "the emergence in action of a novel relational product, growing out of the uniqueness of the individual on the one hand, and the materials, events, people, or circumstances of his life on the other". He defined the motivation for creativity as "man's tendency to actualize himself, to become his potentialities". Here Rogers implies that an individual will become or achieve his potentialities by using his own means rather than those forced upon him.

In the light of this definition we can speculate, and say that to be creative an individual must be relatively free from inhibition, free to make novel combinations of ideas, free to express his curiosity and imagination; his need for approval and affiliation must not interfere with his willingness to take a calculated risk nor with his willingness to be different. This freedom, or this willingness, undergrids creative expression.

When I speak of potential creative ability and the preschool child, I am not referring to the so-called gifted child, the child who is doing nuclear physics at the age of seven or who is supposedly ready for college at ten or twelve. He arouses my intellectual curiosity, but he is not the child for whom I am doing my research.

The ultimate goal of my research is to increase our understanding of young children in order that we enable them to live more creatively, i.e., free them to live creatively. In contrast, there are those who want to predict and control children's behavior. If I predict and control my child's behavior, then he cannot grow beyond the level which I have attained, and to this extent I stunt his growth and I enslave him. Research should increase our understanding of young children, but not for the purpose of prediction and control. Rather we should let our increased understanding help us to offer children the opportunities which will free them to live creatively, free them to become the best that they can become, i.e., to become their potentialities.

Now consider with me different types of creative expression. At one extreme we have the creative genius who benefits the world, e.g., Archimedes, Michelangelo, Newton, Freud. Man's understanding and appreciation of the world has changed because these men lived.

A less extreme type of creative expression is that which you and I know personally. We have an idea, original with us, and of such quality that we can share it with others if we wish. The letters to "Dear Heloise" can serve to illustrate this type of creativity. For example, one mother wrote that she put vegetable coloring in the water when she boiled eggs. One glance in the refrigerator

tells her which eggs are raw and which are hard boiled; and furthermore, the children are delighted with the colored eggs which they take to school in their lunch boxes.

The practical side of the creativity picture also was illustrated by Dr. L. C. Repucci of the Dow Chemical Company. When he spoke at the annual meeting of the American Psychological Association in 1964, he was asked whether he equated problem solving with creativity. Dr. Repucci objected to the question and then said, "Where I come from, the guy who has an idea that makes a buck, he's creative, huh?" Dr. Repucci professed to have left his idealism in graduate school.

Still another type of creative experience is that of the small child or the uninitiated. Here we find that feeling of joy which accompanies the realization, "I did it myself!" Louis H. Sullivan, the architect, in his book The Autobiography of an Idea, recalled that when he was a child of five, he looked up at the sky and saw the moon pushing its way through the clouds. He commented about this to his mother. She glanced at the sky and corrected him, stating that the clouds were merely moving across the face of the moon. Young Louis looked at the sky again. This time his eyes focused on the moon and he saw the clouds moving across its face. Then deliberately he focused on the clouds, and again the moon seemed to be plowing through them. Excitedly, he told his mother of his discovery, completely oblivious of the fact that in reality it was she who had made his discovery possible. Nevertheless, the creative moment was his. You and I have known this same joy of discovery, this creative moment, and it is this that I seek to understand in the young child.

Much of the recent research has been devoted to the study of highly creative adults, usually identified as creative by their products or their work -- the artist, the composer, the writer. The personalities of these adults have been studied in attempts to identify the various characteristics which may be factors in creative ability or which may be necessary for the expression of creative ability. Studies of young adults and school age children have followed; and certain factors which seem to encourage or stifle the development of creative ability have been identified. Now logitudinal validation studies are needed; and the initiation of such studies is dependent upon the development of instruments which can be used with preschool children.

General Problems

The problems involved in the measurement of creativity in preschool children include those which may be encountered in any research with young children.

The initial problem is one of securing subjects. Few children of preschool age are gathered together in convenient, accessible groups. Those who are in nursery schools constitute a select group; and literally, the instruments developed for use with these children are not necessarily suitable for the general population of young children.

The next problem is that of obtaining the cooperation of the preschool child, once he has been located. This requires patience, ingenuity, and flexibility, and can be expensive in both time and money. In research with young children in particular, the stage may be set for a specific type of behavior, but the

experimenter must be receptive to unexpected responses and alert to their possible significance. This may be a major reason that many researchers have shied away from the study of young children.

Closely allied to the cooperation of the young child is the honesty of the experimenter. If you would have a child tell you, in words or actions, what he is really like and of what he is capable, then you must approach him with complete honesty and at no time try to force him into a mold which is a product of your imagination. I seriously question the use of research designs such as those in which the child is given false information and those in which success and failure are predetermined by the experimenter rather than being products of the child's effort and ability. In such situations, the design loses its simplicity, and variables unknown and uncontrolled are introduced.

Still another problem is found in the evaluation of the young child's responses. Adults have difficulty seeing the world through a child's eyes, and their subjective evaluations are apt to distort the meaning of a child's behavior. If a verbal response is required, the young child's speech may be indistinct and easily misunderstood, or the words he uses, even though spoken clearly, may have a special meaning for him unknown to the experimenter. Also, if the task is somewhat complex, the child's comprehension of the situation may provide him with a goal which is quite different from that intended. Such problems can be minimized by a task which is designed to permit the child to make a simple behavioral response that can be evaluated objectively.

Psychological Freedom

The measurement of creative ability in preschool children began with an exploratory study of the psychological freedom of the young child. This study served to generate hypotheses on which subsequent research has been based.

A young child's psychological freedom, his freedom to express himself in exploring and manipulating his environment, was measured in a laboratory situation in which children were given an opportunity to play freely with a series of simple toys. Each child was alone when he played with the toys, and he played with them as long as he wanted to; there was no time limit. The toys included such objects as cork balls, pipe cleaners, interlocking blocks, wax discs, and a pan of water.

The freedom with which each child expressed himself was indicated by the variety of his play responses; and a "freedom score" was obtained by analyzing a running record of his play. This record was scored for the variety of sensory experiences employed by the child in his investigation of the toys, the number of games he invented, the variety of his constructions, and his combination of the toys in play. Some types of play were common to the activities of all children. For example, when the cork balls and pipe cleaners were presented, every child strung the balls on the pipe cleaners. Some children did only this, whereas one of the more imaginative children played with the cork balls for more than half an hour. The games he invented seemed limitless. At one time he filled both hands and his mouth with cork balls and then threw and spit, releasing them all at once. Cork balls bounced everywhere. Then, within a few seconds, he was on the floor with the balls playing a game which closely resembled three-cushion billiards. The play behavior of the children who participated in this study resulted in a wide

range of scores, indicating that some children were extremely inhibited and others were extremely free.

Individual intelligence tests were also administered to the children who participated in this research in order that the relationship between intelligence and psychological freedom be studied. This relationship proved to be negative. The children who were most free in their play had the lowest intelligence test scores, IQ's in the 90's. The children who were the most inhibited in their play had the highest intelligence test scores, IQ's above 140. This relationship must be interpreted with caution. Children can only obtain high intelligence test scores if they conform, i.e., if they give the correct answers. A capable child, motivated to please the examiner, can obtain a high intelligence test score; while an equally capable child, not so motivated, may obtain a lower score.

Psychological freedom was also compared to sociometric status. Children identified as social isolates included some who were extremely free and others who were extremely inhibited; however, a marked difference seemed to exist in these children's reactions to their isolate status. The extremely free children seemed not to care whether they were accepted by the group, whereas the inhibited children, those who were least free to express themselves, appeared to struggle for group acceptance.

The studies of psychological freedom were followed by the development of instruments for the measurement of specific characteristics, motivational and intellectual, which are related to creative ability in older children and adults. The hope has been, and still is, that the measurement of these characteristics will provide the means for identifying the young child who is potentially creative.

Motivational Characteristics

Motivational characteristics chosen for study included (1) freedom to use conforming and nonconforming behavior and (2) willingness to try difficult tasks. These motivational characteristics were accepted as indicative of psychological freedom and as related to the independence training and achievement demands of the socialization period in early childhood. Also, for these two characteristics there was behavioral evidence in early childhood.

Research instruments for use with young children should be game-like tasks. They should be of inherent interest and easily understood by the children, and they should require simple behavioral responses that can be scored objectively. Tasks which met these criteria were developed; nevertheless, problems arose -- problems which the children themselves frequently indicated and solved.

Conformity-Nonconformity.- The creative person is willing to be different; he may conform or not of his own free will.

The study of freedom to use conforming and nonconforming behavior began with the use of placecards at the nursery school luncheon tables. Each noon one child distributed identical placecards for the other children at his table and then chose a card for himself identical to the others or of a different color. This simple task did differentiate between compulsive conformers and compulsive non-conformers; but during the data gathering, which continued for weeks, the children's

comments indicated that they were not sitting with their friends and they were not being offered their favorite colors. Consequently, the task was not of equal potency for all children, and it was far too time-consuming.

These problems were solved by shifting from the use of placecards to the construction of small picture booklets. Conformity to peers was suggested by the construction of picture booklets for three friends, specifically named by each child; and the colors used for the pages of the booklets were selected for each child individually and ranged from his favorite to his least liked color. In this same manner, the picture booklets were used in a study of conformity to parents. The general design of this task also suggested the development of form-boards for the measurement of conformity-nonconformity in an impersonal situation.

The conformity-nonconformity research instruments were administered to children from three to six years of age. Compulsive conformists and compulsive nonconformists were easily identified; but for individual children the tendency to conform varied from one situation to another. There were no age differences in the conforming behavior of the children but there were sex differences. The boys, as young as four, were more apt to be nonconformists than were the girls.

Willingness to Try Difficult Tasks.- The creative person enjoys taking a calculated risk. He enjoys activities in which the risk is neither too great, as when success depends on luck, nor too easy, as when success is assured.

The study of children's willingness to try the difficult required the development of tasks based on measurable abilities. This was necessary in order that each child be offered a choice between the easy and the difficult relative to his own ability. One such task was a set of puzzles, based on the ability to see visual relations. The underlying assumption was that the more pieces there were in the puzzle, the more difficult the puzzle would be. This was true; but nevertheless, many problems arose.

The first child to try one of the puzzles asked, "What do I put it in?" The influence of inlay puzzles was apparent, and frames for the puzzle were promptly made.

The straight-edged puzzle pieces then posed another problem. These pieces could be put into the puzzle frame incorrectly, i.e., without completing the picture. This resulted in the children joyfully judging their work to be a success when the experimenter judged it to be a failure. The explanation was simple; the children's goal was different from that of the experimenter. This problem was solved by changing from straight to curved edges on the puzzle pieces. This made it impossible to put the puzzles together incorrectly. They were then self-corrective.

A second instrument for the measurement of willingness to try the difficult, was a buttoning task, dependent on manual dexterity. Large buttons are easier to handle than small buttons; therefore, buttons ranging from small to large could be used to offer a child his choice between the easy and the difficult in a situation dependent on manual dexterity.

A third instrument was a target game, dependent on gross motor skill. The target could be placed near the child or farther away, thus making the task easy

or difficult. Early exploratory work indicated that the target should be one with a built-in surprise, similar to a jack-in-the-box. Only when confronted with this type of target were the children motivated to play the game in a way which truly revealed their willingness to try the difficult.

The design of the research game was the same for all three instruments -- puzzles, buttons, and target. Each child's ability was determined in a pretest and the instrument was then adjusted so that he could be offered easy and difficult tasks relative to his own ability. For the buttons and the puzzles, the child's speed of performance determined his ability. In the target game, the child's accuracy in hitting the target determined his ability. Statistical analysis has shown this adjustment for ability to be adequate, i.e., the scores used to indicate a child's willingness to try the difficult are independent of his actual ability. Of the three instruments, the target game has proved to be the most promising for future research.

Intellectual Characteristics

A major problem in the measurement of intellectual characteristics at the preschool level is that many of the abilities identified in older children, such as fluency and elaboration, are not necessarily differentiated in early childhood. Curiosity and originality, for which independent measures might be possible, were the intellectual characteristics chosen for study.

Curiosity.- The study of curiosity was focused on exploratory behavior directed toward the acquisition of information. Early problems were related to the scoring of the children's responses. Differentiating between dramatic behavior and curious behavior demanded subjective evaluations. Similarly, degrees of curiosity could not be scored objectively. These problems were solved by the development of an extremely simple task designed to measure a child's preference for the novel. The expression of a preference for the novel or the unknown is one example of exploratory behavior directed toward the acquisition of information.

In the curiosity task, each child became familiar with several designs by talking about them with the experimenter. He was then offered his choice in a series of paired designs, one of which was familiar to him and the other novel. This curiosity task was administered to many children before one child unwittingly indicated a problem. He talked about the novel designs before making his choices, and thus he chose between two familiar designs, rather than between one familiar and one novel. To eliminate this problem, the designs were placed in envelopes and the child made his choices between two envelopes, one clearly marked with the familiar design and the other designated as containing a "surprise" design. Thus, the novel design was never seen unless the child chose it. This change insured the novelty of the one design and markedly increased the discriminatory power of the task.

The curiosity instrument has been administered to children from three to six years of age. Neither sex differences nor age differences have been indicated thus far; however, there does appear to be a relationship between verbal contributions during the familiarization period and scores on the curiosity task. This relationship can be clarified in future research designed for the study of curiosity, originality, and verbal ability.

Originality.- The study of preschool children's originality began with an exploratory use of materials designed for older subjects. This served to indicate problem areas and to provide clues for the way in which an appropriate instrument might be developed. Specific problems were posed by the method of scoring and by the stimulus materials.

Statistical infrequency, as usually applied to the scoring of originality tasks, compares one child's responses to those of other children. By this method, the child who has a pet name for an object will profit inasmuch as his response will not be duplicated by another child, and yet his ideas may not be more original than those of other children. This scoring problem was solved by comparing each child with himself rather than with other children. In other words, each response of a given child was compared to all other responses made by that child; and then the child who gave the greatest variety of responses was judged to be the most original.

Line drawings, frequently used in the study of originality, were impractical because young children want to handle the materials about which they are talking. Simple three-dimensional objects were needed; and styrofoam, which can be cut into various shapes, served this purpose.

The final originality instrument consisted of white styrofoam forms for use in a warm-up session and a series of paired forms, red and blue in color, which were presented to each child twice, thus offering him four opportunities to respond to each form.

The originality instrument has been administered to children from three to eight years of age. No sex differences were apparent, but age differences were statistically significant. Older children apparently earn higher originality scores. Beyond this, children in the first and second grades tend to reach the ceiling of the test, and therefore, the major value of their scores is in the identification of children who are less original rather than the identification of children who are more original.

A quick review of the research described above indicates (1) that characteristics which may be related to potential creative ability have been identified in the studies of adults and older children, and (2) that instruments have been developed for use in identifying young children who possess these characteristics. Still other instruments are needed and will be developed. Subsequent steps in this area of creativity research will include a study of the relationships among the measurable characteristics of the potentially creative child and a search for the forces related to the development of these characteristics.

The value which may be derived from an increased understanding of creative ability in the preschool years depends upon whether our role in training children is seen as that of teaching by authority or of setting the stage for creative learning. Admittedly, our role should include both. Where facts are concerned, children may learn by authority, and we can provide that authority; but in those situations in which a child must learn creatively, we must free him for that learning.

As our understanding of creative ability increases, we should be able to provide our children with the knowledge and experience necessary for creative

expression and at the same time grant to each child the freedom to move in a manner of his own choosing toward the distant goals which will emerge as he crystallizes his philosophy of life.

Freedom is the birthright of our children, and responsible freedom is the foundation on which creative ability rests.

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